

Integrating MEditatioN inTO heaRt disease care (The MENTOR Study)

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Doctor of Philosophy

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2020

Certificate of Original Authorship

I, Angela Rao declare that this thesis, is submitted in fulfilment of the requirements for the award of Doctor of Philosophy, in the School of Nursing, Faculty of Health at the University of Technology Sydney.

This thesis is wholly my own work unless otherwise reference or acknowledged. In addition, I certify that all information sources and literature used are indicated in the thesis.

This document has not been submitted for qualifications at any other academic institution.

This research is supported by the Australian Government Research Training Program.

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Date: 18th June 2020

Acknowledgements

This thesis could not have been undertaken, or completed, without the support of many.

Firstly, to my supervision team, Louise Hickman, Michelle DiGiacomo and Jane Phillips. Your expertise, rigour and support have been imperative to my training as a researcher. Thank you for your kindness and selflessness in the support you have given me in bringing this thesis together. For this I am sincerely grateful, and will always remember the contribution you have made in enabling me to reach this milestone.

To Mr Robert Zecchin, for your ongoing support and allowing me to do what I love in a health care environment. To those who enabled the research to go ahead in the Local Health District, and supported data collection and analysis, thank you for going above and beyond for this project. And for all the participants who gave so generously their time and energy to support this project. Thank you.

To my family and friends. For always reminding me of my values and supporting me in this journey to explore mind body therapies and spirituality within a conventional research environment. And to be there when a laugh is needed or to put perceived stressors into perspective.

A special mention must be made to Victor and Wendy Zammit for planting the seed of a PhD in my head, and who could see my potential far earlier than I could. Victor, you said it first!

Because of all the wonderful support from my community, I am able to look forward with excitement at what lies ahead.

Thank you again for your love and support.

Format of thesis

This thesis has adhered to a thesis by compilation format.

Anthology of Publications

1. **Rao, A.**, Newton, P., DiGiacomo, M., Phillips, J.L., & Hickman, L.D. 2019. 'Meditation for the secondary prevention of depression and anxiety in heart disease. A systematic review' *Mindfulness* vol. 10 (1), p. 1-14 [IF: 3.692].
2. **Rao, A.**, Zecchin, R., Newton, P.J., Phillips, J.L., DiGiacomo, M., Denniss, A.R., & Hickman, L.D. 2020. 'The prevalence and impact of depression and anxiety in cardiac rehabilitation: A longitudinal cohort study' *European Journal of Preventive Cardiology* vol. 27 (5), p. 478-489 [IF: 5.640]
3. **Rao, A.**, DiGiacomo, M., Phillips, J.L. & Hickman, L.D. 'Dipping the toe but not ready to jump: Health professional perspectives of integrating meditation into routine heart disease care' *Heart, Lung & Circulation* (under review)

Other Related Publications

4. **Rao, A.**, Newton, P.J, DiGiacomo, M., Hickman, L.D., Hwang, C., & Davidson, P.M. 2018. 'Optimal gender specific strategies for the secondary prevention of cardiovascular disease in women. A systematic review' *Journal of Cardiopulmonary Rehabilitation and Prevention* vol. 38 (5), p. 279-285 [IF: 1.815].

Conference presentations

Rao, A., Zecchin, R., Newton, P.J., Phillips, J.L., DiGiacomo, M., Denniss, A.R., & Hickman, L.D. (2019).

‘The impact of depression and anxiety on cardiac rehabilitation programs: A cohort study of prevalence, predictors and adherence rates.’ *Cardiac Society of Australia and New Zealand Annual Scientific Meeting*. 8th-11th August 2019, Adelaide, Australia (mini oral presentation).

Rao, A., Zecchin, R., Newton, P.J., DiGiacomo, M., Phillips, J.L., Denniss, A.R. & Hickman, L.D. (2019)

‘Prevalence and predictors of depression and anxiety in a cardiac rehabilitation population and its impact on adherence: a cohort study’ Australian Cardiac Rehabilitation Association Annual Scientific Meeting. 5th-7th August 2019, Sydney, Australia (oral presentation).

Rao A., DiGiacomo M., Phillips J.L, Hickman L.D. (2019). ‘Health professional perspectives of the organisational barriers and facilitators to implementing meditation in heart disease clinical settings.’ Australian Cardiac Rehabilitation Association Annual Scientific Meeting. 5th-7th August 2019, Sydney, Australia (oral presentation).

Rao, A., Zecchin, R., Newton, P.J., DiGiacomo, M., Phillips, J.L. & Hickman, L.D (2018). ‘Who drops out of cardiac rehabilitation programs (2007-2017)?’ *European Society of Cardiology Congress*, 25-29th August 2018, Munich, Germany (poster presentation).

Rao, A., Zecchin, R., Newton, P.J., DiGiacomo, M., Phillips, J.L. & Hickman, L.D (2018). ‘The significance of depression and anxiety in heart disease’ *Australian Cardiac Rehabilitation Association Annual Scientific Meeting*, 30th July -1st August 2018, Brisbane, Australia (poster presentation).

Rao, A., DiGiacomo, M., Newton, P.J., Phillips, J.L & Hickman, L.D (2018). ‘Meditation and Secondary Prevention of Depression and Anxiety in Heart Disease: A Systematic Review.’ *Sigma Theta Tau International 29th International Nursing Research Congress*. 27-29th July 2018, Melbourne, Australia (oral presentation).

Rao, A., Zecchin, R., Newton, P.J., DiGiacomo, M., Phillips, J.L. & Hickman, L.D. (2018) The significance of depression and anxiety in heart disease, *Cardiac Rehabilitation Association of*

Australia (NSW & ACT) AGM, 12th October 2018, Brisbane, Australia (invited oral poster presentation).

Rao, A., Zecchin, R., Newton, P.J., DiGiacomo, M., Phillips, J.L. & Hickman, L.D. (2018) 'Who drops out of cardiac rehabilitation programs?' *Cardiac Rehabilitation Association of Australia (NSW & ACT) AGM, 12th October 2018, Brisbane, Australia (invited oral poster presentation).*

Rao, A., Newton, P., DiGiacomo, M., Phillips, J.L. & Hickman, L.D. (2016) 'Meditation as a secondary prevention strategy for heart disease.' *Australian Cardiac Rehabilitation Association 2016 Annual Scientific Meeting. 1-3rd August 2016, Adelaide, Australia (oral presentation).*

Other Related Presentations

Rao, A., Lee, J., Agar, M (2017). Panel discussion: Conducting Clinical Trials. Practical Perspectives, *Centre for Cardiovascular & Chronic Care Summer School, University of Technology Sydney, Australia (invited panel presentation).*

Rao, A., Newton, P.J, DiGiacomo, M., Hickman, L.D., Hwang, C., & Davidson, P.M. (2016). 'Which gender specific cardiac rehabilitation models best reduce cardiovascular risk in women?' *21st International Council On Women's Health Issues Congress. Scale and Sustainability: Moving Women's Health Issues Forward. 6-9th November 2016, Baltimore, Maryland, USA (oral presentation).*

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Thesis Abstract

Background: Depression and anxiety symptoms after a cardiac event are often under-recognised and undertreated, reducing the ability of people living with heart disease to effectively manage their symptoms and to fully optimise the opportunities afforded by cardiac rehabilitation programs.

Aims: The Integrating MEditation inTO heaRt disease care (MENTOR) Project aimed to generate contextual knowledge to understand the capacity for meditation to improve the psychological well-being of people participating in a cardiac rehabilitation program.

Methods: A three-phased explanatory sequential mixed methods project, composed of four discrete yet interrelated studies. The MENTOR Project is underpinned by two complementary interrelated frameworks: 1) the World Health Organisation's Innovative Care for Chronic Conditions Framework; and 2) Bandura's Self-Efficacy Model.

Phase 1 identified the burden of depression and anxiety in cardiac rehabilitation programs, and included a longitudinal cohort study, and a systematic review of meditation's feasibility in reducing depression and anxiety symptoms. Phase 2 tested the feasibility and acceptability of a meditation intervention, and included a phase II RCT and semi-structured interviews of i) people living with heart disease's perspectives on participating in a meditation intervention; and ii) health professionals' perspectives of the barriers and facilitators to integrating this self-care strategy into existing cardiac rehabilitation programs. Phase 3 recommendations for meditation research and practice were generated during the meta-inference of the integrated data from Phases 1 and 2.

Results: Meta-inferences generated from the MENTOR Project found that a range of supports are required to integrate meditation at the patient, health organisation and health systems levels of heart disease care. Compared with the general population, moderate depressive symptoms were higher in people who attended cardiac rehabilitation programs (18% vs 5%). Anxiety and stress were the strongest predictors of moderate depression in people living with heart disease ($p < 0.001$), and

depression was a strong predictor of anxiety ($p<0.001$). While cardiac rehabilitation contributed to modest reductions in depression and anxiety symptoms, these symptoms reduced the capacity for people living with heart disease to adhere to cardiac rehabilitation programs (depression: 24% vs 13%; $p<0.001$; anxiety: 32% vs 23%; $p<0.001$).

The preliminary phase II results suggest it is feasible to recruit people in a future phase III trial and may also increase cardiac rehabilitation attendance and adherence. Integrating a meditation intervention into cardiac rehabilitation was also considered to be acceptable to health professionals and people living with heart disease.

Conclusion: Better monitoring of depression and anxiety symptoms throughout cardiac rehabilitation programs is required, and the integration of psychological support strategies is warranted. An integrated approach to care that is inclusive of meditation has the potential of improving psychological well-being and the self-efficacy of people living with heart disease and increase their adherence to cardiac rehabilitation programs. Building the effectiveness and efficacy evidence of the role of mediation in cardiac rehabilitation is critical to ensuring that the relevant supports and processes are available to integrate this non-pharmacological strategy into existing programs. In the meantime, implementing the MENTOR Project recommendations at the patient, health organisation and health systems levels will do much to improve the psychological care of people living with heart disease in Australia.

Abbreviations

AMI	Acute Myocardial Infarction
bpm	Beats Per Minute
cm	Centimetres
CAD	Coronary Artery Disease
CD	Compact Disc
CI	Confidence Interval
DASS-21	Depression Anxiety Stress Scale
DSM-V	Diagnostic and Statistical Manual of Mental Disorders – Volume 5
GP	General Practitioner
HADS	Hospital Anxiety and Depression Scale
ICD-10	International Classification of Diseases
kg	Kilograms
m	Metres
MD	Medical Doctor
METS	Metabolic Equivalent of Task
mmHg	Millimoles of Mercury
MSES-R	Mindfulness Self-Efficacy Scale - Revised
NSTEMI	Non ST Elevation Myocardial Infarction
NYHA	New York Heart Association Classification
PCI	Percutaneous Coronary Intervention
PPM	Permanent Pacemaker

RCT	Randomised Controlled Trial
RN	Registered Nurse
STAI	State Trait Anxiety Inventory
STEMI	ST Elevation Myocardial Infarction
V02	Maximal volume of oxygen delivered to the working muscles per minute
6MWT	Six Minute Walk Test

Glossary of terms

Acceptability	The probability that a method or intervention will be used by a specific population.
Acute myocardial infarction	<p>Life threatening emergency occurring when a vessel supplying blood to the heart muscle is suddenly blocked completely by a blood clot.</p> <p>The lay term given to a myocardial infarction is a 'heart attack'.</p>
Acute coronary syndromes	Umbrella term given for heart attacks and unstable angina.
Cardiac rehabilitation	The coordinated sum of activities required to influence favourably the underlying cause of cardiovascular disease, as well as to provide the best possible physical, mental and social conditions, so that the patients may, by their own efforts, preserve or resume optimal functioning in their community and through improved health behaviour, slow or reverse progression of disease.
Coronary heart disease	Or ischaemic heart disease, is the most common form of cardiovascular disease, most commonly occurring as an acute myocardial infarction and angina.
Depression	Or clinical depression, is characterised by depressed mood or anhedonia (loss of interest or pleasure) for at least two weeks, accompanied by significant functional impairment and additional somatic or cognitive symptoms.
Feasibility	An analysis and evaluation of a proposed project to determine if it is technically feasible; is feasible with the estimated cost; and will be profitable.

Generalised anxiety disorder	Excessive anxiety and worry about a number of activities or events that occurs for most days over a period of six months, accompanied by three of the following symptoms: i) restlessness; ii) fatigue; iii) difficulty concentrating or mind going blank; iv) irritability; iv) muscle tension; or vi) sleep disturbance. The anxiety is not attributed to a medical condition or medication, and causes clinically significant distress.
Heart disease	A group of disorders of the heart and blood vessels, including coronary heart disease, cerebrovascular disease, peripheral artery disease, rheumatic heart disease, congenital heart disease, deep vein thrombosis and pulmonary emboli.
High income countries	A country with an economy that has a World Bank Atlas defined gross national income of \geq \$12,056 US dollars in 2017.
Integrated care	An approach to strengthen people-centred health systems through the promotion of the comprehensive delivery of quality services across the life course, designed according to the multidimensional needs of the population and the individual and delivered by a coordinated multidisciplinary team of providers working across settings and levels of care. It should be effectively managed to ensure optimal outcomes and the appropriate use of resources based on the best available evidence, with feedback loops to continuously improve performance and to tackle upstream causes of ill health and to promote well-being through inter-sectoral and multi-sectoral actions.

Knowledge translation	A dynamic, iterative process that includes synthesis, dissemination, exchange and ethically sound application of knowledge to improve the health of all, provide more effective health services and products and strengthen the health care system.
Low income countries	Countries with an economy that has a gross national income per capita of \leq \$995 as calculated by the World Bank Atlas method in 2017.
Major depression	Depressed mood or anhedonia, exhibited for at least two weeks, in conjunction with two of the following: i) markedly diminished interest or pleasure in activities; ii) more than 5% change in body weight; iii) insomnia or hypersomnia; iv) psychomotor retardation or agitation; v) fatigue or loss of energy; vi) feelings of worthlessness or guilt; vii) diminished ability to concentrate or think; or viii) recurrent thoughts of death.
Medical model	An approach to health service delivery that is underpinned by the diagnosis and treatment of physical conditions.
Metabolic exercise test	Metabolic equivalent of task (MET), or the ratio of energy expenditure to body mass. One MET is defined as 3.5ml of oxygen/per kilogram/per minute, which is equivalent to the energy expended at rest.
Middle income countries	Countries with an economy that has a gross national income, as defined by the World Bank Atlas, of between \$996 and \$12055 US dollars in 2017.
Mild depression	Low level depression, in line with mild cut-off points for depression in validated standardised questionnaire scales

Minor ‘subthreshold’ depression	Low-level depression, with one core symptom (see major depression) present most of the day, every day, for at least two weeks, leading to a change in function or impairment in daily activities.
Moderate depression	Clinically significant depressive symptoms, in line with moderate cut-off points on validated, standardised questionnaire scales
Outpatient care	The period of follow up treatment after hospital discharge. It may involve participation in a defined and structured cardiac rehabilitation program, or care provided by a multidisciplinary team.
Percutaneous coronary intervention	Formerly known as ‘angioplasty with stent’, it is a non-surgical procedure involving the use of a catheter (thin flexible tube) to place a small structure (stent) to open up blood vessels in the heart that may have been narrowed by a plaque build-up (atherosclerosis).
Person-centred care	Health care delivery that priorities and is shaped around the needs and expectations of people, their families and their communities, rather than focus on diseases.
Secondary prevention	Treatment of people with established coronary heart disease cerebrovascular disease, or peripheral vascular disease, involving medical care, modification of behavioural risk factors, psychosocial care, education and support for self-management, that is delivered in various settings.

Sedentary Lifestyle	Sedentary lifestyle, or sedentary behaviour can be defined as an activity that is performed at or slightly above the resting metabolic rate (1-1.5 METS) that is equivalent to sitting or lying down.
Self-efficacy	A reflection of the perceived capabilities an individual has to improve their behaviour. One's perception, rather than their capability has a more prominent influence on behaviour.
Self-management	Refers to the individual's ability to manage the symptoms, treatment, physical and psychosocial consequences and lifestyle changes inherent in living with a chronic condition.
Six minute walk test	A measure of functional capacity that measures (in metres) the total distance walked on a flat surface in six minutes.
State anxiety	An unpleasant emotional arousal in the face of threatening demands or dangers that includes a cognitive appraisal of the threat.
Trait anxiety	The stable tendency to attend to, experience and report negative emotions such as fears, worries and anxiety across many situations.